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NovoPlan
delivered by Qualigon

ELECTROCOATING, GALVANIZATION

The production and management teams now have the possibility to get a complete real-time view of the processes. Object flows are visible, and bottlenecks can be identified much faster and more easily than before.

100%

products with actual quality data and status

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Coating Expertise Built Over 30+ Years

NovoPlan GmbH is a Germany-based company focusing on surface technology. Their 30 years of experience working with customers from Europe, Asia and South America make NovoPlan an expert in coatings for plastic processors, machine, tools and mold makers. The company has also developed its own coating technology, PlanoTek®, which helps companies in the field of plastics processing in all industries, mostly in the automotive, packaging, medical technology and stationery verticals.

Goals

Real-time Location Data Ensuring Production Quality

Enhancing quality management and **digitizing the production process** were the two main drivers for using a real-time localization system to accelerate innovation at the factory. NovoPlan wanted to digitize the full production process, starting from the preparation area onto the production area and then finalizing the activities/steps in the preparation area again. To enhance the quality management control, location data provided exact information about whether each product went through the production process in the correct manner and **spent the determined time needed** for each step for applying the coating layers, ensuring consistent quality.

The system needed to meet the following requirements:

- Get real-time process visibility to verify and document current processes

- Provide accurate 3D-positioning data, due to the geometry of the process steps and the combination of manual and machine-supported steps

- Measure processes' time

- Send all positions and times to an in-house-developed ERP system

- Provide a visual summary of the movements and the workload within a selectable period

30 cm Accuracy in a Harsh Environment

A very demanding demand in the realization of the installation was the requested localization accuracy of less than 30 cm per sample. This was also the result of the positioning of the machines in the production area, where spaces and production processes have been highly optimized.

The scenario contains a combination of walls made of **concrete and metal**. Together with the high number of metallic reflectors of the production machines and the **aggressive atmosphere** due to the different chemical processes, it created a very demanding environment.

A moving crane beneath the ceiling introduced a further challenge to the project. On the one hand, it was necessary to ensure the further full movement capabilities in order not to impede the production process, on the other hand, it represented a possible obstacle affecting the system's reliability. The crane also reduces the free corridor for the anchors' installation and the resulting intra-anchor synch communication.

The objects that have to be localized are attached to transport frames and moved both manually and by the crane. The resulting movements of the frames are completely different and enhance the analytical requirements.

Solution

## Two Positioning Approaches Combined into a Single Installation

The total positioning area covered a total of 700 m2 divided into the preparation and production area. Different positioning requirements for these two areas led to different approaches. The preparation area was equipped with Anchor 1.4, since only 2D-localization was needed. The production area was covered with anchors with directional antennas and a barometer to enable **3D-localization**. In order to get the best height information, calibration is performed before the tags enter a new cycle in the production area. The refresh rate was set to **100 milliseconds** to ensure precise timekeeping while meeting the needed battery life.

"Sewio provides a reliable and exciting solution for ultra-wideband RTLS. The API to access the system and the collected data in particular offer great possibilities to integrate it with our and also the customer's systems. In this project, we used it to transfer the data to the ERP system. Internally, we have developed different extensions, e.g., to reduce the installation and setup time in our projects. Sewio was selected after an intensive test phase and we are glad about our decision in every project we carry out. The advantages of the system are not only linked to the technology or the current status of the products, but also to the passion of the Sewio team to support us and our customers in complex project situations to enable therealization."

Georgios Karachos
Managing Director at
QUALIGON GmbH

Thanks to detailed planning and the patented directional anchor technology, Qualigon was able to ensure high accuracy also in situations when the metal crane is moving with attached objects or when the visibility of the tags is reduced. An extensive test phase, which was part of the RTLS installation, showed that the horizontal and vertical plane deviation was less than 10 cm in 50% of cases.
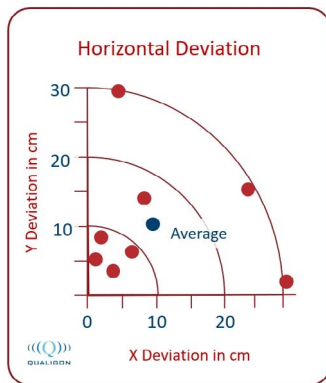
After the installation of anchors and the network's setup, it took less than a week for the QUALIGON experts to start optimizing the system together with the extensive verification phase.

Accessing and transferring the RTLS data to the in-house ERP system was easy and smooth through the use of the open Sewio API, and was carried out as a joint NovoPlan and QUALIGON project.

Solution Numbers:

700 m²
area covered

13
receivers

100
tracked objects

Digital-twin for Improved Quality Management

The RTLS not only met the requirements as defined but also exceeded them by introducing further advantages listed in the following. The production and management teams now have the possibility to get a complete real-time view of the processes. Object flows are visible, and bottlenecks can be identified much faster and more easily than before. This offers the possibility to create a **digital-twin** of the factory and to perform simulations and predictions based on real data.

Another main benefit is also the highly enhanced level of **quality management** and the possibility of documentation of every processed good. This is being used to increase the customer relationship by providing them with the newly gained information and is also used internally by the optimization and quality departments

The digital transformation of the production process has led to a feeling that the production's status is now being carried out based on long-term expertise. This, in turn, can now also be expressed as quantifiable key performance indicators.

Using Sewio's RTLS , NovoPlan were offered the possibility to enhance and digitize their processes and to introduce smart production. All this is achieved by maintaining the investments in machines and keeping the well-established processes. Together with the smooth transition from the old approach to the new RTLS-driven digitalization, this has resulted in high savings when compared to an "all-new" approach.

With the already installed RTLS in place, it's very easy to apply new use-cases without additional costs, e.g., increased employee safety by using geo-fencing or introducing material flow and handling in the ERP system. On top of this, NovoPlan also plans to install the RTLS in further production areas, which again doesn't require any reconfiguration in the current system but only needs additional anchors to cover more areas.

Results in Numbers:

30 cm	**100%**	**6 months**
accuracy with confidence level R98	products with actual quality data and status	implementation time

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Key Factors for Choosing Sewio RTLS

- **30 cm accuracy** which allows the full flexibility and variability of virtual zones without any changes of infrastructure

- The guaranteed **long battery life** of 1.5 years, even with the high refresh rate needed for tracking movement, decreases the total cost of ownership

- The ability to easily set **an unlimited number of virtual zones** that can be updated with a single click at any time in the future to adapt to the updates of processes

- **Continuous track and trace** – unlike RFID and other technologies that provide only presence detection

- **Low maintenance and higher reliability** compared to RFID-powered systems

- The ability to **scale the system easily and quickly** to track more objects and expand the system to more halls

- Unlike RFID and Bluetooth, Sewio's UWB-based technology works with higher precision and can work **in harsh metallic and variable environments**

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QUALIGON offers turnkey RTLS solutions, especially for industry, retail, safety and healthcare, in highly data-driven scenarios. The technologies used comprise of Bluetooth Low Energy (BLE), WiFi and Sewio's ultra-wideband (UWB) technology and are selected based on customer needs. With our deep expertise in business analytics and high-performance database solutions, we're used to providing enhanced and predictive analytics.

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Sewio Networks s.r.o.

Sewio Networks is a manufacturer of a **real-time location system (RTLS)** for indoor tracking that drives business results for companies in the intralogistics, retail, sport, entertainment and livestock industries. Sewio system is built on **ultra-wide band technology (UWB)** and delivered with RTLS Studio, remote management and visualization software.

It gives partners and customers a precise, easy-to-integrate, reliable and fully scalable IoT solution for indoor tracking that allows process visibility, boosts production efficiency, simplifies the inventory process and increases safety. Founded in 2014, Sewio is headquartered in the Czech Republic with offices in Germany and France. Sewio has 70+ system integration partners and powers customers in 37 countries. Customers include: Volkswagen, Budvar, Pirelli, Matador, TPCA, Škoda.

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